

Application No. 10/723,796  
Response to Office Action

Customer No. 01933

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE ABSTRACT

The abstract has been amended to better comply with the requirements of MPEP 608.01(b), as required by the Examiner. No new matter has been added, and it is respectfully requested that the amendments to the abstract be approved and entered and that the objection to the abstract be withdrawn.

THE CLAIMS

Claim 1 has been amended based on the subject matter of claim 3 to clarify that the cross adhesion inhibitor is jetted from the plasma torch.

In addition, claims 1 and 3-5 have been amended to make some minor grammatical improvements so as to put them in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to claims 1 and 3-5 be approved and entered.

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THE PRIOR ART REJECTION

Claims 1-3 were rejected under 35 USC 102 as being anticipated by EP 0 429 671 ("Fujishima"), and claims 4 and 5 were rejected under 35 USC 103 as being obvious in view of the combination of Fujishima and USP 6,335,507 ("Nakata et al"). These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in amended independent claim 1, a dross adhesion inhibitor is jetted from the plasma torch onto a cutting start position of the object material. Similarly, according to the present invention as recited in independent claim 3, jetting means is provided in the plasma torch for jetting a dross adhesion inhibitor onto a cutting start position of the object material.

Thus, according to the claimed present invention the dross adhesion inhibitor is jetted from the plasma torch to the cutting start position. With this structure, the dross adhesion inhibitor can be jetted accurately onto the cutting start position and without being interrupted by plasma gas during pre-flow jetting. (See for example page 6, line 21 to page 7, line 15.)

By contrast, it is respectfully pointed out that Fujishima discloses a separate nozzle 4 which is provided alongside the

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plasma torch 1. Thus, it is respectfully submitted that Fujishima clearly does not at all disclose, teach or suggest jetting the dross adhesion inhibitor from the plasma torch in the manner of the claimed present invention. And it is respectfully pointed out that pages 6 and 7 of the specification describe the problems faced by an arrangement such as the one shown in Fig. 1 of Fujishima.

With respect to claims 4 and 5, the Examiner contends that it would have been obvious in view of Nakata et al to "use assist gas means as a conveyor for dross inhibitor." It is respectfully pointed out, however, that Nakata et al merely discloses jetting assist gas 11 onto a piercing site to carry away molten dross from the piercing site to the underlay 3, which catches the dross. Thus, according to Nakata et al the dross is simply carried away from the piercing site and adheres to underlay 3. (See column 5, lines 26-33 of Nakata et al.)

In addition, Nakata et al discloses that a fluid may be supplied to the clearance 5 via injection port 23 to cool the dross in the clearance 5 before the dross drops to the underlay 3 to decrease the amount of dross that adheres to the underlay 3. (See column 6, lines 10-16 of Nakata et al.)

Thus, it is respectfully submitted that Nakata et al is directed to an apparatus whereby dross is carried away from the

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machining target 6 toward the underlay 3, and whereby an adhesion inhibitor may be provided to cool dross to prevent dross adhesion to the underlay 3. That is, Nakata et al discloses a method of applying dross adhesion inhibitor that is similar to the technique disclosed by Fujishima in that the dross adhesion inhibitor is sprayed from a source separate from the plasma torch. Unlike Fujishima, however, according to Nakata et al the dross adhesion inhibitor is not even applied to the machining target 6, but rather is applied to the clearance 5 over the underlay 3.

It is respectfully submitted, moreover, that the Examiner has not pointed to any objective teaching which would support the Examiner's assertion that it would be obvious to jet a dross adhesion inhibitor from the plasma torch based on the teachings of Nakata et al. Indeed, it is respectfully pointed out that the Examiner has merely broadly asserted that such a modification would reduce the number of parts and more effectively apply the dross adhesion inhibitor.

It is respectfully submitted, however, that Nakata et al discloses that the dross adhesion inhibitor is supplied from a separate inlet 23, and it is respectfully submitted that the target of the dross adhesion inhibitor according to Nakata et al is the underlay 3 (the clearance 5 over the underlay 3) and not the machining target 6.

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Therefore, it is respectfully submitted that the combination of Fujishima and Nakata et al does not disclose, teach or suggest the feature of the present invention whereby the dross adhesion inhibitor is jetted from the plasma torch.

With respect to claim 5, moreover, it is respectfully pointed out that the Examiner has not pointed to any feature in Fujishima or Nakata et al as corresponding to the feature of the present invention as recited in claim 5 whereby the dross adhesion inhibitor supply flow path for supplying the dross adhesion inhibitor is connected to a plasma gas flow path in which a plasma gas used for forming the plasma arc flows.

In view of the foregoing, it is respectfully submitted that amended independent claim 1, independent claim 3, and claims 2, 4 and 5 respectively depending therefrom, all clearly patentably distinguish over Fujishima and Nakata et al, taken singly or in combination, under 35 USC 102 as well as under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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